NORTH SLOPE
SUBAREA CONTINGENCY PLAN

HAZMAT
SECTION

TABLES

(This page intentionally left blank)

HAZMAT: PART ONE – HAZMAT RESPONSE

A. INITIAL NOTIFICATION OF RESPONSE AGENCIES

All hazardous material (Hazmat) releases in excess of the reportable quantity (RQ) must be reported by the responsible party to the National Response Center. [The EPA has established the RQs for all of the roughly 800 Superfund law (CERCLA) substances.] Any hazmat release, regardless of the amount, is required to be reported to the State of Alaska, Department of Environmental Conservation (ADEC). Upon notification of a release, the NRC shall promptly notify the appropriate FOSC. The FOSC shall also contact the ADEC. If the State receives notification first, the State shall notify the FOSC promptly. An emergency notification list is provided at the front of the *Response Section* to this plan. The FOSC and the SOSC (ADEC) will relay the notification to local communities, resource agencies, medical facilities, and others as necessary.

The local government on-scene coordinator (LOSC) is in command and control until he or she determines that there is no longer an imminent threat to public safety. The LOSC can at any time request higher authority to assume command and control of an incident. Local emergency plans should be consulted for any specific directions or guidelines. The local fire department and/or the Local Emergency Planning Committee should have the most current records on local storage of hazardous materials that are in quantities that meet federal reporting requirements.

B. RECOGNITION

The recognition of the chemical or physical hazards is essential to dealing with a release safely. Chemical and physical hazards may be encountered by emergency response personnel when responding to a hazardous material incident. Chemical hazards include biological, radioactive, toxic, flammable, and reactive hazards. Physical hazards include slips, trips and falls, compressed gases, materials handling, thermal, electrical and noise hazards, and confined spaces.

Once a hazardous material has been identified, it is important to determine the hazards and properties. Thousands of substances exhibit one or more characteristics of flammability, radioactivity, corrosiveness, toxicity, or other properties which classify them as hazardous. For any particular hazardous category, the degree of hazard varies depending on the substance.

The degree of hazard is a relative measure of how hazardous a substance may be. For example, the Immediately Dangerous to Life and Health (IDLH) concentration of butyl acetate in air is 10,000 parts per million (ppm); the IDLH for tetrachloroethane is 150 ppm. Tetrachloroethane is therefore far more toxic (has a higher degree of hazard) when inhaled in low concentration than butyl acetate. Vapors from butyl acetate, however, have a higher degree of explosive hazard than tetrachloroethane vapors, which are not explosive.

After the substance(s) has been identified, the hazardous properties and degree of hazard can be determined using reference materials. Chemical properties and the health hazards associated with the various materials transported in the North Slope Subarea can be found in the USCG CHRIS Manual, the DOT Emergency Response Guidebook (current edition), and CAMEO (Computer-Aided Management of Emergency Operations) computer programs. Industry experts can be consulted, as well. The Chemical Manufacturers Association supports an excellent resource, the CHEMTREC 24-hour information number, 800-424-9300. Additional references are provided below.

Although appropriate references give information about a substance's environmental behavior, additional field data will likely be required. Most frequently, air monitoring and sampling are needed to verify and identify the presence of hazardous materials, to calculate concentrations, and to confirm dispersion patterns.

Available references (including several websites) for HAZMAT and response organization information:
(Many of the following publications/programs can be found at ADEC offices or with the local fire department.)

- The Unified Plan, which addresses the Unified Command Structure in Annex B, Appendix II, and also provides statewide Hazmat response guidance in Annex L: http://www.dec.state.ak.us/spar/perp/plan.htm
- Commandant Instruction #16465.30
- National Contingency Plan (40 CFR part 300)
- The Alaska Incident Management System (AIMS) Guide (November 2002 Revision 1) http://www.akrrt.org/aim/aim_toc.shtml
- Coastal Sensitivity Atlas
- USCG CHRIS Manual
- DOT Emergency Response Guidebook (current edition) - http://hazmat.dot.gov/gydebook.htm
- CHEMTREC, Chemical/Hazardous Substance information, 800-424-9300
- SAX - Dangerous Properties of Hazardous Materials
- IMDC Codes
- Material Safety Data Sheets (MSDS) - http://www.hazard.com/msds/index.php
- NFPA Fire Protection Guide On Hazardous Materials
- NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Also, the NIOSH/OSHA Pocket Guide Book: http://www.cdc.gov/niosh/npg/npg.html
- HartCrowser, Inc., 1999. 1998 Statewide Hazardous Material Inventory. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- HartCrowser, Inc., 1999. Alaska Level A and B Hazardous Material Response Resources. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- HartCrowser, 2000. Evaluation of Chemical Threats to the Alaska Public. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- Statewide Oil and Hazardous Substance Inventory Tier Two Data Summary Report, latest edition. Report available at: www.ak-prepared.com/serc/, under the link for "Tier II Data Summary Report." Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response and U.S. Environmental Protection Agency, Region 10, by Ecology & Environment, Inc. (The Tier Two data, available through ADEC, can be reviewed using the CAMEO program)
- Spill Tactics for Alaska Responders (STAR) Manual, April 2006. http://www.dec.state.ak.us/spar/perp/star/index.htm
- Alaska Statewide Oil and Hazardous Substance Inventory for Reporting Year 2008, Ecology and Environment. Prepared for U.S. Environmental Protection Agency, Region 10.
- Statewide Hazardous Materials Commodity Flow Study, Nuka Research and Planning Group, 2010. Prepared for the Alaska Department of Environmental Conservation and the Alaska Department of Military and Veterans Affairs. http://dec.alaska.gov/spar/perp/hazmat/study.html

C. EVALUATION

To properly evaluate a hazardous materials release, the incident must be characterized. Incident characterization is the process of positively identifying the substance(s) involved and evaluating the actual or potential public health and environmental impacts. Characterizing a hazardous substance incident is generally a two-phase process, an initial characterization followed by a more comprehensive characterization.

1. Initial Characterization

The initial characterization is based on information that is readily available or can be obtained fairly rapidly to determine what hazards exist and if immediate protective measures are necessary. During this initial phase, a number of key decisions must be made regarding:

- ❖ Imminent or potential threat to public health.
- ❖ Imminent or potential threat to the environment.
- ❖ Immediate need for protective actions to prevent or reduce the impact.
- ❖ Protection of the health and safety of response personnel.

If the incident is not immediately dangerous to human life or sensitive environments, more time is available to evaluate the hazards, to design plans for cleanup, and to establish safety requirements for response personnel. Information for characterizing the hazards can be obtained from on-scene intelligence (records, placards, eye witnesses, etc.), direct-reading of instruments, and sampling. Depending on the nature of the incident and the amount of time available, various combinations of this information gathering processes are used. The following outline describes an approach to collecting data needed to evaluate the impact of a hazardous materials incident.

An attempt should be made to gather as much information as possible, such as:

- ■ Incident Specifics:
  - Description and exact location of the incident.
  - Date and time of occurrence.
  - Hazardous materials involved and their physical/chemical properties.
  - Present status of incident.
  - Potential pathways of dispersion.
  - Habitation - population at risk.
  - Environmentally sensitive areas - endangered species, delicate ecosystems.
  - Economically sensitive areas - industrial, agricultural.
  - Accessibility by air, roads, and waterways.
  - Current weather and forecast (next 24 to 48 hours).
  - Aerial photographs/video when possible.
  - A general layout and mapping of the site.
  - Available communications.

- ■ Off-site reconnaissance (that can be conducted in Level D) should be the primary inspection for initial site characterization when the hazards are largely unknown or there is no urgent need to go on-site. Off-site

reconnaissance consists of visual observations and monitoring for atmospheric hazards near the site. Collecting of off-site samples may identify substance migration or indicate on-site conditions.

Off-site reconnaissance would include:

- The general layout and mapping of the site.
- Monitoring ambient air with direct-reading instruments for:
    - Organic and inorganic vapors, gases, and particulates
    - Oxygen deficiency
    - Specific materials, if known
    - Combustible gases and radiation
- Identifying placards, labels, or markings on containers or vehicles.
- Noting the configuration of containers, tank cars, and trailers.
- Noting the types and numbers of containers, tank cars, trailers, buildings, and impoundments.
- Identifying any leachate or runoff.
- Looking for biological indicators - dead vegetation, animals, insects, or fish.
- Noting any unusual odors or conditions.
- Observing any vapors, clouds, or suspicious substances.
- Taking off-site samples of air, surface water, ground water (wells), drinking water, site runoff, and soil.
- Reviewing the Dangerous Cargo Manifest.
- Conducting interviews with workers, witnesses, observers, or inhabitants.

■ An on-site survey (conducted in a minimum of Level B protection until hazards can be determined) may be necessary if a more thorough evaluation of hazards is required. On-site surveys require personnel to enter the restricted or hot zone of the site. Prior to any personnel conducting an on-site survey, an entry plan addressing what will be initially accomplished and prescribing the procedures to protect the health and safety of response personnel will be developed.

On-site inspection and information gathering would include:

- Monitoring ambient air with direct-reading instruments for:
    - Organic and inorganic vapors, gases, and particulates
    - Oxygen deficiency
    - Specific materials, if known
    - Combustible gases and radiation
- Observing containers, impoundments, or other storage systems and noting:
    - Numbers, types, and quantities of materials
    - Condition of storage systems (state of repair, deterioration, etc.)
    - Container configuration or shape of tank cars, trailers, etc.
    - Labels, marking, identification tags, or other indicators of material
    - Leaks or discharges from containers, tanks, ponds, vehicles, etc.
- Noting physical condition of material:
    - Solids, liquids, gases
    - Color
    - Behavior (foaming, vaporizing, corroding, etc.)
- Determining potential pathways of dispersion - air, surface water, ground water, land surface, biological routes.
- Taking on-site samples of storage containers, air, surface water, ground water (wells), drinking water, site runoff, and soil.

2. Comprehensive Characterization

Comprehensive characterization is the second phase, a phase which may not be needed in all responses. It is a more methodical investigation to enhance, refine, and enlarge the information base obtained during the initial characterization. This phase provides more complete information for characterizing the hazards associated with an incident. As a continuously operating program, the second phase also reflects environmental changes resulting from any response activities.

Information obtained off-site and during the initial site entries can be sufficient to thoroughly identify and assess the human and environmental effects of an incident. But if it is not, an environmental surveillance program needs to be implemented. Most of the same type of information collected during the preliminary inspection is needed, but more detailed and extensive. Instead of one or two groundwater samples being collected, for instance, a broad and intensive groundwater survey may be needed over a long period of time.

Results from preliminary inspections provide a screening mechanism for a more complete environmental surveillance program to determine the full extent of contamination. Since mitigation and remedial measures may cause changes in the original conditions, a continual surveillance program can be used to identify and track fluctuations or ramifications.

D. EVACUATION

Neither the Coast Guard nor the EPA has the authority to order an evacuation of facilities or communities in the event of a release; this authority lies with local or state entities. However, evacuation should be strongly recommended to local civil authorities (police, fire departments, etc.) whenever a hazardous release poses a threat to surrounding personnel. With a release of hazardous materials, the area should be isolated for at least 100 meters in all directions until the material is identified. Only trained and properly equipped personnel should be allowed access.

Quick evacuation tables are located in the back of the DOT Emergency Response Guidebook. Evacuation should always begin with people in downwind and in low-lying areas. Continual reassessment is necessary to account for changes in weather wind, rate of release, etc. CAMEO should be used to provide an air plume trajectory model for downwind toxic plume distances. Again, constant reassessment will be required.

Issues concerning disaster assistance should be referred to DMVA's Division of Homeland Security and Emergency Management.

E. DIRECTION AND SITE/ENTRY CONTROL

The purpose of site control is to minimize potential contamination of emergency response personnel, protect the public from any hazards, and prevent unlawful entry onto the site which may result in an additional release of material, destruction of evidence, or prolong the cleanup effort. The degree of site control necessary depends on site characteristics, site size, and the surrounding community.

Several site control procedures should be implemented to reduce potential exposure and to ensure that an effective, rapid cleanup is conducted:

- Secure site, and establish entry control points.
- Compile a site map.

- Prepare the site for subsequent activities.
- Establish work zones.
- Use the buddy system when entering.
- Establish and strictly enforce decontamination procedures.
- Establish site security measures.
- Set up communications networks.
- Enforce safe work practices.

For complete guidance on Direction and Site Entry/Control, refer to the NIOSH/OSHA/USCG/EPA Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities (Publication No. 85-115).

F. COMMAND AND CONTROL

The local government on-scene coordinator (LOSC) is in command and control until he or she determines that there is no longer an imminent threat to public safety. The LOSC can at any time request higher authority to assume command and control of an incident. All applicable local emergency plans should be consulted. After the LOSC has determined that public safety is not at risk, then the Unified Command response organization will assume command and control of the incident.

Government response organization in the State of Alaska is based on the Unified Command structure of the Incident Command System (ICS), which is outlined in the Alaska Incident Management System (AIMS) Guide. The Unified Command brings together the FOSC, the SOSC, and the Responsible Party's Incident Commander (along with the LOSC, if participation is warranted and available) into one governing unit. The ICS and the Unified Command structure are discussed in further detail in the **Unified Plan**, **Annex B**, and in the **AIMS Guide,** as well as the Coast Guard's and EPA's **Incident Management Handbook (IMH)**. The organizational structure and Hazmat team member duties and responsibilities for Hazmat response are also described in the AIMS Guide, Appendix B and the USCG and EPA IMH.

G. COMMUNICATIONS

A communications plan for all sections of the ICS will be established by the Incident Commander.

At this time, a pre-established generic communications plan accounting for the various police, fire, federal, state, and local frequencies has not been established. State and federal communications resources are listed in the **Unified Plan, Annex E, Appendix V** and in the *Resources Section, Part Four* of this plan.

H. WARNING SYSTEMS & EMERGENCY PUBLIC NOTIFICATION

For FOSC/SOSC access to emergency broadcast systems refer to the **Unified Plan, Annex E, Appendix III, Tab V.** For a listing of radio, newspaper, and television contacts refer to the Information Directory in the *Resources Section, Part Three, M. Media* of this plan. The **Unified Plan, Annex I** provides Public Information/Community Relations guidelines and information**.**

I. HEALTH AND MEDICAL SERVICES

For hospital and clinic information refer to the *Response Section* and to the Community Profiles in the *Resources Section, Part One* of this plan.

HAZMAT: PART TWO – RESPONSIBLE PARTY HAZMAT ACTION

A. DISCOVERY AND NOTIFICATION

Any person in charge of a vessel or a facility shall report releases of hazardous materials in excess of the reportable quantity (RQ) as defined in Table 1 of 49 CFR 172.101 to the National Response Center (NRC) 24-hour telephone number, 800-424-8802, in accordance with the National Contingency Plan. Any release, regardless of the amount, is required to be reported to the State of Alaska. Notification of the State can be done by contacting the Alaska Department of Environmental Conservation, either thru the ADEC Area Response Team or through the 24-hour telephone number, 800-478-9300.

If direct reporting to the NRC is not immediately practicable, reports can be made to the Environmental Protection Agency's pre-designated FOSC who may be contacted through the regional 24-hour response telephone number (206-553-1263) and/or to the Captain of the Port Western Alaska (the USCG FOSC for the North Slope Subarea, 907-271-6700). All such reports shall be promptly relayed to the NRC.

In any event, **the person in charge of the vessel, vehicle, or facility involved in a hazardous material release shall notify the NRC and the State of Alaska as soon as possible.**

NOTE: *Additional emergency contact information for Federal and State reporting is presented on page one in the* ***Response Section*** *of this plan.*

As much information as possible shall be reported. This will include, but is not limited to, the following:

- Location of the release
- Type(s) of material(s) released, including any pertinent MSDS data
- An estimate of the quantity of material released
- Possible source of the release
- Date and time of the release
- Population and/or environment at risk.

B. REMOVAL ACTION

The responsible party shall, to the fullest extent possible, perform promptly the necessary removal action to the satisfaction of the predesignated FOSC and SOSC.

Regardless of whether or not a cleanup will be conducted, the responsible party shall cooperate fully with all federal, state, and local agencies to ensure that the incident is handled in a safe, proper manner.

The oil spill industry on the North Slope also maintains several Level A Hazmat Teams capable of responding to Hazmat releases in the Prudhoe Bay and adjacent areas.

(This page intentionally left blank)

HAZMAT: PART THREE – STATE HAZMAT ACTION

A. AUTHORITY

The Alaska Department of Environmental Conservation is mandated by statute to respond promptly to a discharge of oil or a hazardous substance (AS 46.80.130). Additionally, the ADEC may contract with a person or municipality in order to meet response requirements, or establish and maintain a containment and cleanup capability (i.e., personnel, equipment and supplies) (AS 46.09.040).

B. RESPONSE POLICY

The ADEC is currently operating in accordance with an August 1992 policy decision, which precludes ADEC personnel from responding to situations which require Level A/B protection. A reduction in Fiscal Year 1993 funding resulted in corresponding decreases in the level of equipment, training, and overall readiness. ADEC personnel are prohibited from responding with or using personal protective equipment beyond the Level C protection category (as defined in EPA standards).

For additional information regarding the State's general response policy, refer to the **Unified Plan, Annex A, Appendix VI, Tab C.**

C. STATE RESPONSE CAPABILITIES

The ADEC has entered into local response agreements with the Fairbanks North Star Borough (FNSB), the Municipality of Anchorage (MOA), the City of Valdez, the City of Kodiak, the City and Borough of Juneau, and the City of Ketchikan. These teams (along with the 103rd Civil Support Team, the EPA team, and other teams in the State) comprise the Statewide Hazmat Response Team. In the event of a hazmat release requiring immediate response, the ADEC predesignated SOSC may request support from any of the Hazmat Response Teams. These teams maintain a Level A entry capability and can respond beyond their jurisdictional boundaries at the request of the SOSC. The teams are to be used strictly for emergency response operations. Once the immediate hazard is dealt with, the teams will be released to return to their home station. Post-response recovery operations will be handled by the responsible party (if known) or through ADEC response term contractors or Federal contractors.

ADEC currently maintains several term contracts for hazmat assessment, contaminated sites and hazmat/unknowns response, and oil spill response. These term contractors are listed in the **Unified Plan, Annex E, Appendix III, Tab X**. Several of these term contractors possess limited hazmat response capability.

Another asset in the State is the 103rd Civil Support Team (CST), based at Fort Richardson, Alaska. The 103rd CST can be requested through DMVA's Division of Homeland Security and Emergency Management, State Emergency Coordination Center (SECC: 428-7100 or 888-462-7100). The primary focus of the team is weapons of mass destruction (WMD), including chemical and biological warfare agents and toxic industrial chemicals. The 103rd CST maintains Level A entry capability and a wide variety of detection instruments and support equipment. The 103rd CST can be utilized in an advisory role for hazard modeling or medical assessment and in an assist mode to perform entries alone or in conjunction with other first responders.

D. RESPONSIBILITIES

State agency roles and responsibilities are clearly defined in the **Unified Plan, Annex A**. During a hazmat incident, the State On-Scene Coordinator's anticipated and prioritized response objectives are as indicated below:

- **Safety**: Ensure the safety of persons involved, responding or exposed from the immediate effects of the incident.

- **Public Health:** Ensure protection of public health and welfare from the direct or indirect effects of contamination on drinking water, air and food.

- **Source Mitigation:** Ensure actions are taken to stop or reduce the release at the source to reduce/eliminate further danger to public health and the environment.

- **Environment:** Ensure protection of the environment, natural and cultural resources, and biota from the direct or indirect effects of contamination.

- **Cleanup:** Ensure adequate containment, control, cleanup and disposal by the responsible party or take over when cleanup is inadequate.

- **Restoration:** Ensure assessment of contamination and damage and restoration of property, natural resources and the environment.

- **Cost Recovery:** Ensure recovery of costs and penalties to the Oil and Hazardous Substance Release Prevention and Response Fund for response containment, removal, remedial actions, or damage.

HAZMAT: PART FOUR – FEDERAL HAZMAT ACTION

A. AUTHORITY

Section 311 of the Federal Water Pollution Control Act (FWPCA), and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 are the principal authorities for federal response to discharges of oil and releases of hazardous substances. The procedures and standards for conducting responses are contained in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300). Under the NCP and the Unified Plan, each Coast Guard COTP for coastal zones, or EPA FOSC for inland zones, coordinates federal activities on-scene as either the predesignated FOSC or as the first federal official in the absence of the predesignated FOSC. The FOSC objective is to ensure rapid, efficient mitigation of actual or threatened pollution releases or discharges.

B. JURISDICTION

The NCP identifies the Coast Guard COTP for Western Alaska (Commanding Officer, Sector Anchorage) as the predesignated federal OSC (FOSC) for the coastal zone. The NCP identifies the EPA (Region 10 Alaska Operations Office) as the predesignated FOSC for the inland zone. The FOSC will respond to hazardous substance releases, or threats of release, occurring in the coastal zone and not involving DOD vessels or DOD facilities, which originate from:

- Vessels and vehicles (as well as other modes of transportation, e.g., railroad)
- Facilities, other than hazardous waste management facilities, when the release requires immediate action to prevent risk of harm to human life, health, or the environment.
- Hazardous waste management facilities, or illegal disposal areas, when the FOSC determines emergency containment or other immediate removal actions are necessary prior to the arrival of the EPA OSC.

For all shoreside incidents in the coastal zone, once the immediate threat to human life, health, or the environment has been abated and the character of the response changes to a long-term cleanup or site remediation, the FOSC responsibilities will be transferred from the USCG COTP to a designated EPA official.

NOTE: The Local On-Scene Coordinator (LOSC) will be the person in charge as long as there is an immediate threat to public health or safety. The LOSC may defer to the FOSC or SOSC (per the Unified Plan, Annex B).

C. RESPONSE POLICY

The USCG will follow the policy guidance contained in COMDTINST M16465.30, "Policy Guidance for Response to Hazardous Chemical Releases", and the Marine Safety Manual, Volume VI, Chapter 7 when responding to a hazardous chemical release. The USCG and EPA Incident Management Handbooks also provides guidelines for responding to a hazardous substance release.

The U.S. EPA, Region 10 maintains a Level A capability through their START Contractor and EPA response staff stationed in Alaska. The U.S. Coast Guard maintains the Pacific Strike Team located in Novato, California; a description of Strike Team capabilities is provided in the **Unified Plan, Annex E, Appendix IV.**

Federal personnel, with the exception of specialized teams (e.g., the National Strike Force, the Pacific Strike Team, or the EPA START Team), will not enter a hazardous environment. The USCG and other federal agencies in Alaska will maintain a "conservative" Level D response capability level. "Conservative" response consists of recommending evacuating the affected area and maintaining a safe perimeter while attempting to positively identify the pollutant and outlining a clear course of action. This response posture is appropriate due to insufficient numbers of trained or equipped personnel to allow a safe and proper entry into a hazardous environment and the low risk of a chemical release in the area.

Level D protection is primarily work uniform/coveralls, safety boots, safety goggles and a hard hat. This provides minimal protection. Level D must not be worn for "entry" into any hazardous materials situation. It does NOT provide protection from chemicals. Level D protection strictly applies to non-hazardous environments (i.e., Command Post, Cold Zone, etc.).

In situations requiring an entry into a hazardous environment, federal agencies will rely on the capabilities of the USCG Pacific Strike Team, EPA Emergency Response Teams (ERTs), state and local hazmat response teams, if available, and industry or commercial resources.

The EPA may call upon the Department of Defense's Alaskan Command (as a member of the Alaska Regional Response Team) to provide hazmat response resources (teams and equipment) from U.S. Army and U.S. Air Force facilities, if capabilities exist. Refer to the **Unified Plan** for a description of the National Strike Force and other special forces.

In implementing this conservative response posture, the EPA or USCG FOSC will carry out all the functions not requiring entry of unit personnel into a hazardous environment. These functions include:

- Conducting preliminary assessment of the incident.
- Carrying out FOSC measures such as restricting access to affected areas, establishing safety zones, notifying affected agencies, coordinating with state and local agencies, and assisting as resources permit.
- Conducting local contingency planning.
- Identifying responsible parties, and informing them of their liability for removal costs.
- Carrying out "first aid" mitigation if the situation warrants and capability exists.
- Monitoring cleanup activities.

The CAMEO (Computer-Aided Management of Emergency Operations) computer programs will be an important part of any chemical release incident. The CAMEO chemical database with Codebreaker and Response Information Data Sheets modules provide a rapid means of identifying chemicals and their associated hazards. The ALOHA air modeling program, part of CAMEO, provides a rapid means of developing a downwind hazard evaluation. Sector Anchorage Port Operations Department personnel and/or the NOAA SSC, will be responsible for operating the CAMEO programs during a hazardous chemical release for the FOSC. The deployed Hazmat Teams and/or the NOAA SSC will be responsible for operating the CAMEO programs during a hazardous chemical release for the FOSC. Local fire departments and EPA also maintain CAMEO to assist in their response efforts. Programs for the ALOHA model need to be frequently updated to account for changing wind and weather conditions, source strength, and other variable conditions.

HAZMAT: PART FIVE – SUBAREA HAZMAT RISK ASSESSMENT

A. GENERAL

The North Slope Subarea boundaries are equal to the North Slope Borough boundaries, which also define the Local Emergency Planning District (LEPD). The North Slope Borough Local Emergency Planning Committee (LEPC) represents the entire subarea. The City of Barrow is the largest community in the region. Small communities are scattered throughout the borough. Industrial activity is comprised largely of the oil production fields at Prudhoe Bay and other locations on the North Slope.

This part of the *Hazmat Section* provides a brief overview of the risk assessment (hazardous materials used or transported in the North Slope Subarea), the response capabilities, and a hazards analysis summary for the subarea. For a detailed discussion and description of the extremely hazardous substances and other hazardous substances used within the North Slope Subarea, consult the references at the end of *Part Five*.

1. Chemical Inventory

Based on Tier Two reports contained in the CAMEO database, the most prevalent extremely hazardous substances in the region are:

- Sulfuric acid (pure and battery electrolyte)
- Hydrochloric Acid
- Hydrogen Peroxide
- Chlorine

Extremely hazardous substances are generally transported into the subarea from southern points via truck.

2. Chemical Risks

Sulfuric acid and chlorine are the two extremely hazardous substances present within the subarea in amounts greater than the federally-mandated threshold planning quantities. The properties of each substance and how they affect humans are described below:

Sulfuric acid is a dense, colorless, oily liquid. It is highly reactive with a large number of other substances and is readily soluble in water with release of heat. Fumes are released from the liquid through evaporation, and heat as a result of fire or other chemical reaction can significantly increase emissions. Both the liquid and its solutions will cause burns if allowed to come in contact with skin or eyes. Fumes are highly toxic, and reaction of the acid with a variety of substances can produce other toxic gases.

Hydrochloric Acid is a colorless to light yellow liquid. It has a strong pungent odor and reacts violently with water. The acid causes respiratory tract burns, skin burns, eye burns. digestive tract burns, and is harmful if inhaled or swallowed. It may also be harmful if absorbed through skin. Water runoff from fire fighting may be corrosive. Contact with metals liberates flammable gas. Corrosive gases/fumes are given off during burning or thermal decomposition.

Hydrogen Peroxide is a clear, colorless, odorless liquid and is also an oxidizer. The chemical is very hazardous in case of skin contact (irritant), or eye contact (irritant). It is slightly hazardous in case of inhalation (lung sensitizer). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness

of breath. Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Contact with combustibles may cause fire. The chemical decomposes yielding oxygen that supports combustion of organic matters and can cause overpressure if confined.

Chlorine is a greenish-yellow gas with a characteristic odor. It is neither explosive nor flammable, but is a strong oxidizing agent and will support combustion. It is only slightly soluble in water. At about two and one-half times the density of air, it will spread as a dense gas flowing downhill under the influence of gravity. The chemical has a strong affinity for many substances and will usually produce heat on reacting. While dry chlorine is non-corrosive at ordinary temperatures, it becomes extremely corrosive in the presence of moisture. Chlorine gas is primarily a respiratory toxicant. In sufficient concentrations, the gas affects the mucous membranes, the respiratory system and the skin. In high concentrations it can permanently damage the lungs and can cause death by suffocation. Liquid chlorine will cause burns if it comes in contact with skin or eyes.

3. Response Capability

The Fairbanks North Star Borough has equipped and trained a Hazardous Materials (Hazmat) Response Team for response to chemical releases and spills. In the event of a hazardous substance release outside of the borough's jurisdiction, the ADEC can request support from the Fairbanks Hazmat Response Team through their agreement with the Fairbanks North Star Borough. This valuable agreement allows ADEC to request the Level A Hazmat team to respond to an event anywhere in the state, as long as the Fairbanks North Star Borough can spare the services of the equipment and trained personnel. Therefore, the team may be tasked to respond to a chemical release in the North Slope Subarea. (Similar agreements are in place with other hazmat teams in the state.)

The Prudhoe Bay oil industry also maintains Level A capable teams. In addition, several of the larger industrial facilities within the subarea are required to have Risk Management Plans (RMPs) for chemicals exceeding threshold quantities under 40 CFR Part 68 regulations. The RMPs contain emergency response plans for mitigating facility releases. Large bulk fuel production and storage facilities within the subarea also are required to maintain Facility Response Plans and specific levels of response equipment to mitigate oil releases in accordance 40 CFR Part 112.20 regulations.

The North Slope Borough has developed and maintains a local emergency response plan, or all-hazard plan, to respond to a variety of emergencies, including hazardous substance releases.

B. FACILITIES

During the last Tier Two data summary collection (conducted for reporting year 2009), petroleum and chemical information provided by North Slope facilities is presented in the tables below. Previous Tier Two data summary reports can be found at the following website: http://www.ak-prepared.com/serc/

Table C-1 summarizes the Extremely Hazardous Substance (EHS) chemicals reported for this subarea, the total quantity reported, and the number of facilities that reported the chemical in inventory.

Table C-2 identifies communities with industrial facilities that store, utilize, or produce significant quantities of petroleum products. Emergency responders should refer to the CAMEO database program to determine specific chemical hazards at a particular facility, based on Tier Two reporting requirements.

Other hazardous substances are too numerous to attempt to list in the plan. Please visit the website provided above and contact the offices listed to acquire additional information.

As a reminder, the chemical inventory data specific to a facility should be considered sensitive in nature, and should not be freely disseminated as it could potentially be used for the wrong purpose. Alaska statute (AS 40.25.120(a)) was amended to place safeguards on the release of information such as this.

Table C-1: North Slope Subarea – Locations With Extremely Hazardous Substances (EHS)

Chemical	Total Pounds	Location and No. of Facilities
Arsenic Trioxide Powder	4	Prudhoe Bay (2)
Chlorine	600	Prudhoe Bay (1)
Hydrochloric Acid	45,532	Prudhoe Bay (8)
Hydrogen Chloride—Anhydrous	23	Prudhoe Bay (1)
Hydrogen Peroxide	35,953	Prudhoe Bay (2)
Hydrogen Sulfide	22	Prudhoe Bay (1)
Sulfuric Acid	1,011,586	North Slope Subarea (19)

Table C-2: North Slope Subarea - Locations With Oil And Liquid Gases

Substance	Maximum Amount (lbs)	Average Amount (lbs)	Location
Crude Oil	358,510,152	262,958,629	Prudhoe Bay
Diesel (includes AvGas, kerosene, heating oil, ultra low sulfur diesel fuel)	33,267,510	30,693,185	Prudhoe Bay; North Slope communities
Gasoline	101,911	27,612	Prudhoe Bay; North Slope communities
Propane	3,982,762	3,968,382	Prudhoe Bay
Natural Gas	5,439,843,328	4,366,596,363	Prudhoe Bay
Acetylene, all types	11,599	4,955	Prudhoe Bay

C. TRANSPORTATION

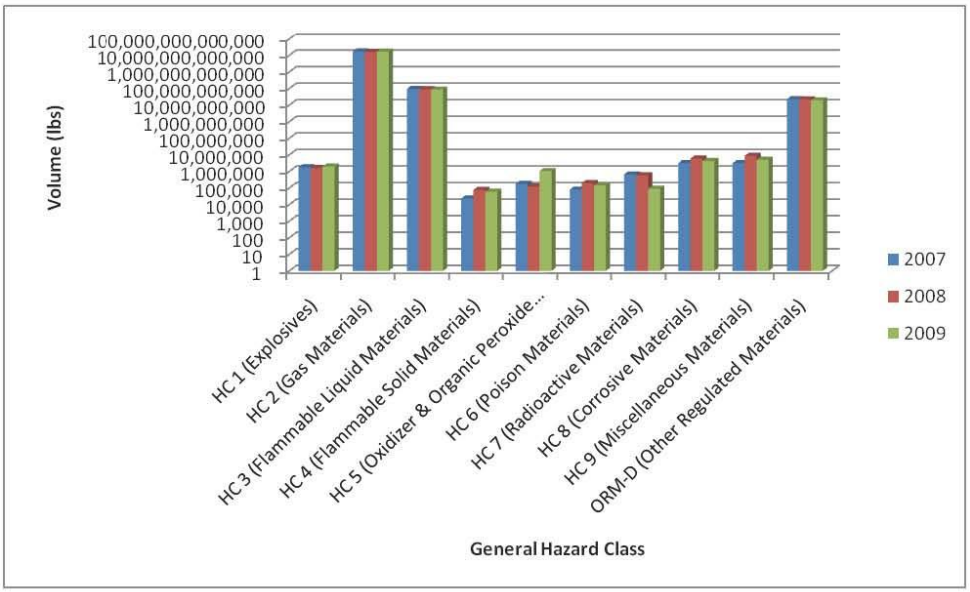
A Statewide Hazmat Commodity Flow Study was jointly sponsored in 2010 by ADEC and ADMVA. The results of this study can be found at this website: http://dec.alaska.gov/spar/perp/hazmat/study.html

The following pages contain information from the Statewide Hazmat Commodity Flow Study conducted in 2010. The information provided is specific to the North Slope subarea.

5.9 North Slope

The transportation of hazardous materials through the North Slope Subarea (NS) includes four (4) modes of transportation: air, highway, marine and pipeline. While the commodities shipped spans the spectrum of hazard classes, the largest volume commodities shipped/transported are HC 2.1 (Natural Gas), and HC 3.0 (Petroleum Crude Oil). The breakdown of hazardous materials volumes from year to year by Hazard Class is depicted in Figure 5-41 below.

Figure 5-41. Volumes of Hazardous Materials Shipped into the NS presented on a log scale



In general, HC 2 commodities (Gas Materials), specifically natural gas, HC 3 commodities (Flammable Liquid Materials), specifically crude oil, and ORM-D (Other Regulated Materials), specifically produced water, dominate the volume of hazardous materials shipped within the NS Subarea. This observation is aligned with the facts that there is substantial natural gas and produced water produced as a direct result of the drilling operations on the North Slope, and that the Trans-Alaska Pipeline originates on the North Slope. As these three hazard classes make up 99.3% of the total volume shipped, the breakdown of volumes of hazard class shipments within this subarea (inclusive of all hazard classes) in a percentage of subarea-wide volume does not provide any meaningful insight. However, excluding those three hazard classes provides a general breakdown of the other hazard classes by percentage of the total remaining volume. Figures 5-42, 5-43 and 5-44 depict the breakdown of hazardous material shipments within the NS Subarea by a percentage of total remaining volume shipped. HC 8 (Corrosive Materials), HC 9 (Miscellaneous Materials) and HC 1 (Explosives) consistently dominate the volume of hazardous materials shipped from year to year.

Figure 5-42. NS Hazardous Materials Percentage of Total Volume by Hazard Class for 2007

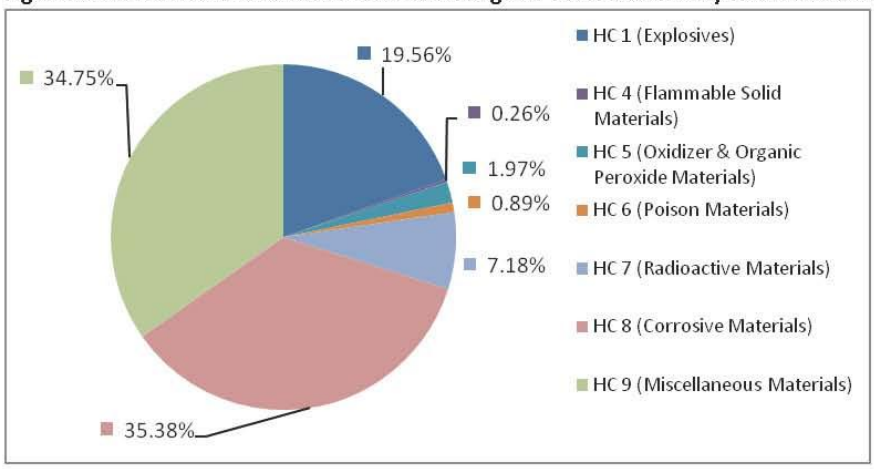


Figure 5-43. NS Hazardous Materials Percentage of Total Volume by Hazard Class for 2008

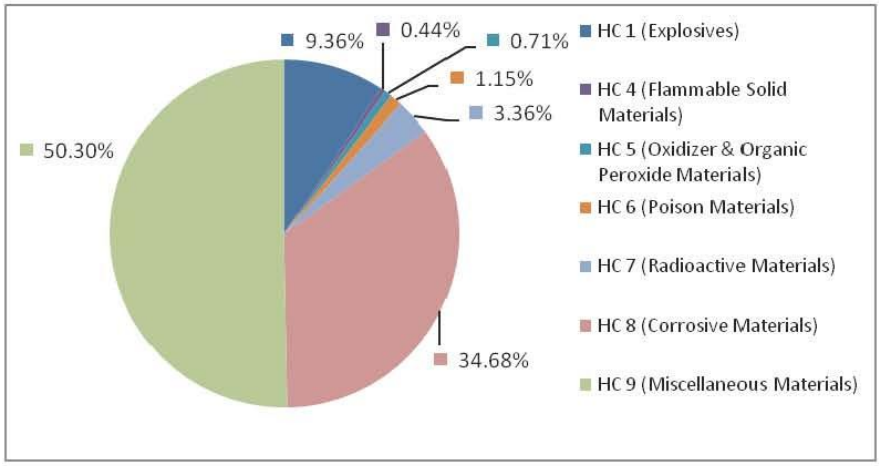


Figure 5-44. NS Hazardous Materials Percentage of Total Volume by Hazard Class for 2009

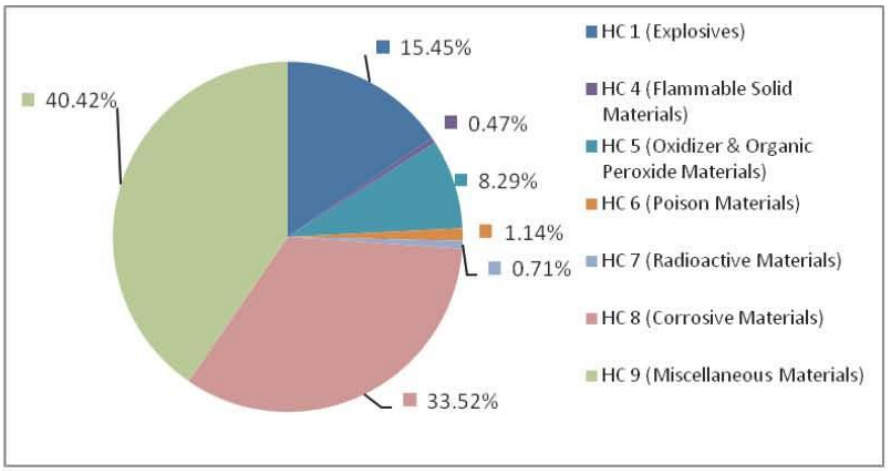


Table 5-63 lists the volume of hazardous materials shipped within the NS Subarea by hazard class for each calendar year evaluated for this study.

Table 5-63. Volumes of Hazard Class Transported within NS Subarea by Calendar Year

Hazard Class	2007 (Total Volume in lbs)	2008 (Total Volume in lbs)	2009 (Total Volume in lbs)
HC 1 (Explosives)	1,759,291	1,602,057	1,950,164
HC 2 (Gas Materials)	17,106,447,039,097	16,105,633,218,281	16,665,444,532,526
HC 3 (Flammable Liquid Materials)	94,766,767,413	90,086,966,893	86,100,701,273
HC 4 (Flammable Solid Materials)	23,014	75,459	59,190
HC 5 (Oxidizer & Organic Peroxide Materials)	177,328	121,495	1,046,318
HC 6 (Poison Materials)	79,978	196,886	144,335
HC 7 (Radioactive Materials)	646,090	575,102	90,087
HC 8 (Corrosive Materials)	3,181,873	5,937,317	4,230,449
HC 9 (Miscellaneous Materials)	3,124,836	8,611,967	5,101,611
ORM-D (Other Regulated Materials)	22,464,000,000	22,113,000,000	19,305,000,000

A more detailed evaluation of each hazard class is provided below. A shipment volume threshold of 100,000 lbs was established for the North Slope Subarea due to the number and volume of hazardous materials commodity shipments.

HC 1 Explosives: The primary explosives that were transported through the North Slope Subarea were HC 1.0, 1.1, 1.4 and 1.5. HC 1.5 represented the highest volume transported from year to year, and increased by 15% in 2008 and another 25% in 2009. HCs 1.0 and 1.1 remained fairly consistent, while HC 1.4 decreased by 32% between 2007 and 2008 and another 48% between 2008 and 2009. Table 5-64 lists the primary HC 1 commodities shipped within the North Slope Subarea. There were no shipments of HC 1.2 or 1.3 that exceeded 100,000 lbs.

Table 5-64. Primary Hazard Class 1 Commodities Shipped within the NS Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
1.0	Ammunition	0006
1.1	Boosters	0042
1.4	Detonator Assemblies, Non-Electric	0361
	Articles, Explosives, N.O.S.	0349
1.5	Explosive, Blasting, Type B or Agent Blasting, Type B	0331
	Ammonium Nitrate-Fuel Oil Mixture	0331
	Explosive, Blasting, Type E	0332

HC 2 Gas Materials: HC 2.1, 2.2 and 2.3 were transported in the North Slope Subarea. The largest volume was represented by HC 2.1, Natural Gas, which was transported via

the pipeline infrastructure on the North Slope. Table 5-65 lists the primary HC 2 commodities shipped within the North Slope Subarea.

Table 5-65. Primary Hazard Class 2 Commodities Shipped within the NS Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
2.1	Natural Gas	1971
	Propane Cylinders	1978
	Compressed Gas, Flammable, N.O.S.	1954
	Acetylene, Dissolved	1001
	Petroleum Gases, Liquefied or Liquefied Petroleum Gas	1075
	Lighters or Lighter Refills	1057
2.2	Compressed Gas, N.O.S.	1956
	Fire Extinguishers	1044
	Carbon Dioxide	1013
	Oxygen, Compressed	1072
	Nitrogen, Compressed	1066
	Argon, Compressed	1006
	Air, Compressed	1002
	Bromotrifluoromethane	1009

HC 3 Flammable Liquid Materials: The North Slope Subarea has the second highest volume of HC 3.0 transported within the State. The primary commodity is crude oil that is shipped via the Trans-Alaska Pipeline, and associated piping on the North Slope, from the North Slope to Valdez. Table 5-66 lists the primary HC 3 commodities shipped within the North Slope Subarea.

Table 5-66. Primary Hazard Class 3 Commodities Shipped within the NS Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
3.0	Crude Oil	1267
	Flammable Liquids, Toxic, N.O.S.	1992
	Paint	1263
	Petroleum Distillates, N.O.S. or Petroleum Products, N.O.S.	1268
	Tetrahydrofuran	2056
	Gasoline	1203
	Combustible Liquid, N.O.S.	1993
	Flammable Liquids, Corrosive, N.O.S.	2924

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
	Alcohols, N.O.S.	1987
	Toluene	1294
	Methanol	1230
	Diesel Fuel; Fuel Oil; Gas Oil; or Heating Oil Light	1202
	Adhesives	1133

HC 4 Flammable Solid Materials: HC varied between 4.1, 4.2 and 4.3 from year to year for this grouping of commodities. Volumes also varied and displayed no visible trend other than potentially industrial demands. There were no HC 4.0 commodities shipped in a volume that exceeded 100,000 lbs.

HC 5 Oxidizer and Organic Peroxide Materials: HC 5.1 and 5.2 were transported within the North Slope Subarea. 2009 displayed the highest volume of both commodity groups (significantly higher than 2007 and 2008. Volumes between 2007 and 2008 decreased or increased, but no apparent trend was noted. Table 5-67 lists the primary HC 5 commodities shipped within the North Slope Subarea.

Table 5-67. Primary Hazard Class 5 Commodities Shipped within the NS Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
5.1	Calcium Hypochlorite, Hydrated or Calcium Hypochlorite, Hydrated Mixtures	2880
	Oxidizing Solid, N.O.S.	1479
5.2	Organic Peroxide Type F, Liquid	3109

HC 6 Poisons: HC 6.1 and 6.2 were transported within the North Slope Subarea. HC 6.1 increased significantly (more than doubling) between 2007 and 2008 and then decreased by approximately 25% between 2008 and 2009. HC 6.2 commodities were primarily regulated medical waste products and did not exceed a volume shipped of 100,000 lbs. Table 5-68 lists the primary HC 6 commodity shipped within the North Slope Subarea.

Table 5-68. Primary Hazard Class 6 Commodities Shipped within the NS Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
6.1	Toxic Liquid, Organic, N.O.S.	2810

HC 7 Radioactive Materials: HC 7.0 shipped within the North Slope Subarea decreased from year to year. While only a 10% decrease between 2007 and 2008, the volume of

shipments decreased by 85% between 2008 and 2009. Table 5-69 lists the primary HC 7 commodity shipped within the North Slope Subarea.

Table 5-69. Primary Hazard Class 7 Commodities Shipped within the NS Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
7.0	Radioactive Material, Surface Contaminated Object or Radioactive Material	2913

HC 8 Corrosive Materials: The volume of HC 8.0 shipped within the North Slope Subarea increased by almost 50% between 2007 and 2008, and then decreased by approximately 30% between 2008 and 2009. Table 5-70 lists the primary HC 8 commodities shipped within the North Slope Subarea.

Table 5-70. Primary Hazard Class 8 Commodities Shipped within the NS Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
8.0	Hypochlorite Solutions	1791
	Corrosive Liquid, Basic, Inorganic, N.O.S.	3266
	Corrosive Cleaning Supplies	1760
	Bisulfites, Aqueous Solutions, N.O.S.	2693
	Batteries, Wet, Filled with Acid	2794
	Corrosive Liquid, Acidic, Inorganic, N.O.S.	3264
	Batteries, Wet, Non-Spillable	2800
	Amines, Liquid, Corrosive, N.O.S. or Polyamines, Liquid, Corrosive, N.O.S.	2735

HC 9 Miscellaneous Materials: The volume of HC 9.0 commodities shipped within the North Slope Subarea saw a dramatic increase between 2007 and 2008 and then dropped but remained higher than 2007 levels in 2009. The sharp increase in 2008 could be attributable to the increase in the Alaska Permanent Fund Dividend checks during this timeframe. Table 5-71 lists the primary HC 9 commodities shipped within the North Slope Subarea.

Table 5-71. Primary Hazard Class 9 Commodities Shipped within the NS Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
9.0	Lithium Batteries	3090
	Environmentally Hazardous Substances, Solid, N.O.S.	3077
	Asbestos	2212
	Hazardous Waste, Liquid, N.O.S.	3082
	Lithium Batteries, Contained in Equipment	3091
	Engines / Vehicles	3166

ORM-D Materials: Produced water, transported via the North Slope Pipeline piping infrastructure is the only ORM-D commodity identified as being transported within the state. Table 5-72 lists the primary ORM-D commodity shipped within the North Slope Subarea.[36]

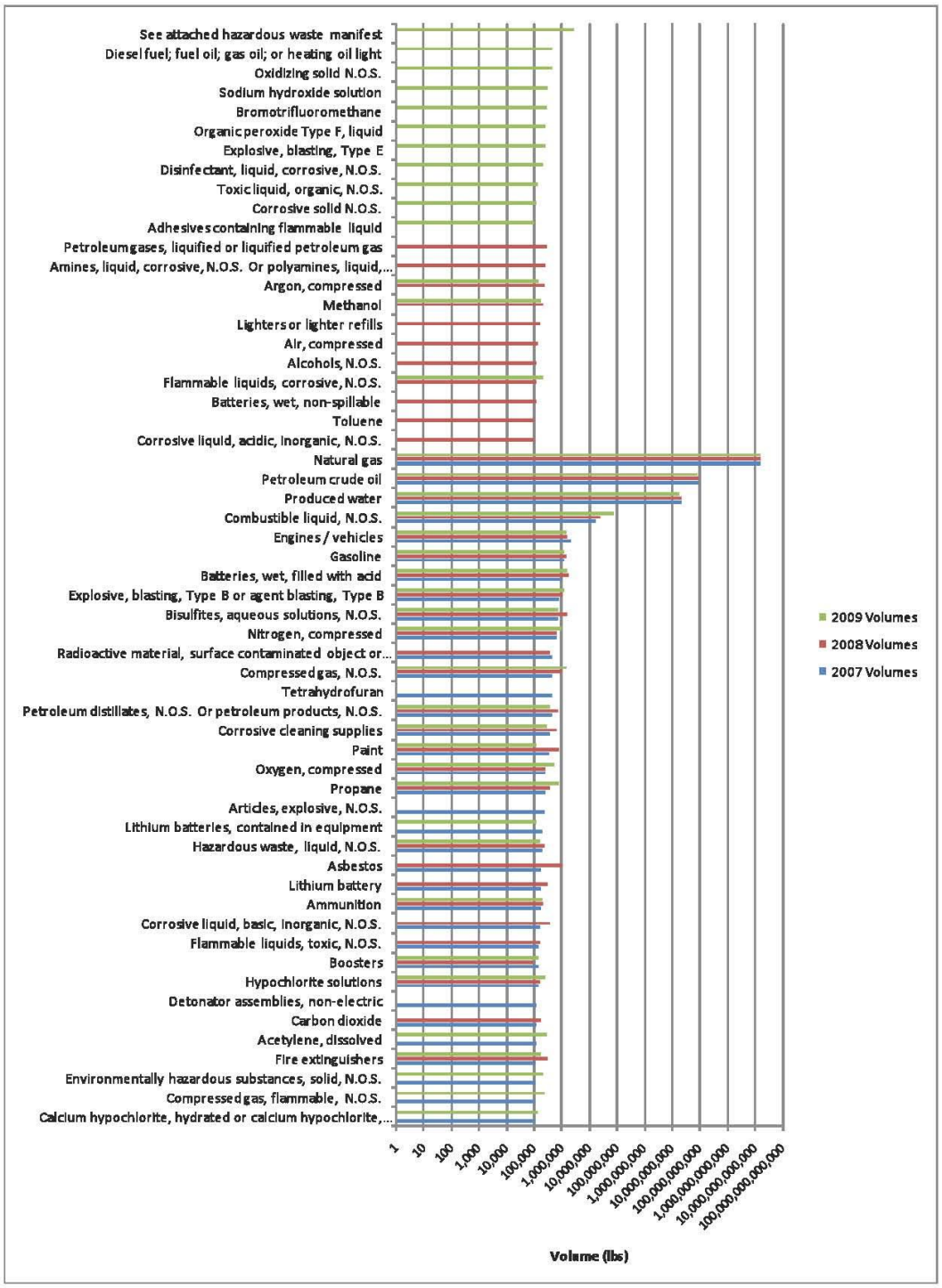
Table 5-72. Primary Hazard Class ORM-D Commodities Shipped within the NS Subarea

Hazard Class	Hazardous Material Description (Greater than 100,000 lbs Shipped)	UN ID Number
ORM-D	Produced Water	None

Figure 5-45 depicts the volume of hazardous materials shipped each year within the North Slope Subarea by Hazardous Material Name for volumes exceeding 100,000 pounds.

[36] Water production totals for 2007, 2008 and 2009 were extracted from the Alaska Risk Assessment Total Produced Water Production 1995-2009 statistics.

Figure 5-45. Hazardous Material Commodities by Hazardous Material Name (Greater than 100,000 lbs) for the North Slope Subarea, for 2007 through 2009, presented on a log scale.



D. REFERENCES

Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases (Unified Plan) Change 3 January 2010, Alaska Regional Response Team, 2010 (as amended).

1998 Statewide Hazardous Material Inventory, HartCrowser, 1999. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

Alaska Level A and B Hazardous Material Response Resources, HartCrowser, 1999. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

Evaluation of Chemical Threats to the Alaska Public, HartCrowser, 2000. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

Alaska Statewide Oil and Hazardous Substance Inventory for Reporting Year 2008, Ecology and Environment. Prepared for U.S. Environmental Protection Agency, Region 10.

Statewide Hazardous Materials Commodity Flow Study, Nuka Research and Planning Group, 2010. Prepared for the Alaska Department of Environmental Conservation and the Alaska Department of Military and Veterans Affairs. http://dec.alaska.gov/spar/perp/hazmat/study.html

(This page intentionally left blank)

HAZMAT: PART SIX – RADIOLOGICAL AND BIOLOGICAL ISSUES

Procedures for radiological response are included in the **Unified Plan, Annex J.**

Presently, a biological response is not addressed, and procedures are not under development for biological issues.

(This page intentionally left blank)